


Name:			
Enrolment No:			
<div>UPES</div> <div>End Semester Examination, May 2025</div> <div><div>Course: Fruit and Vegetable Processing Technology</div><div>Program: B.Tech. Food Technology</div><div>Course Code: HSFT2014</div><div>Instructions: Read all the questions carefully.</div></div> <div><div>Semester: IV</div><div>Duration: 3 Hours</div><div>Max. Marks: 100</div></div>			
S. No.	Section A Short answer questions (MCQ/ T&F) (20Q x 1.5M= 30 Marks)	Marks	COs
Q1	Which component provides rigidity to plant cell walls? A) Cellulose B) Starch C) Protein D) Lipids	1.5	CO1
Q2	Which factor is commonly used in quality control of processed juices? A) Fiber content B) Oil content C) Brix (°Bx) D) Acidity	1.5	CO4
Q3	Which of the following has a long shelf life due to low water activity? A) Fruit nectar B) Jam C) Fruit powder D) Juice	1.5	CO1
Q4	Which gas accelerates the ripening of fruits? A) Oxygen B) Ethylene C) Carbon dioxide D) Nitrogen	1.5	CO1
Q5	Post-harvest spoilage in fruits is mainly caused by: A) Bacteria B) Fungi C) Virus D) Insects	1.5	CO1
Q6	Which storage condition best preserves most fruits and vegetables? A) Warm and dry B) Cold and humid C) Hot and humid D) Dry and cold	1.5	CO4
Q7	Controlled atmosphere storage mainly controls: A) Humidity only	1.5	CO1

	B) Temperature only C) Oxygen and carbon dioxide levels D) Light intensity		
Q8	Modified atmosphere packaging (MAP) aims to: A) Speed up ripening B) Reduce respiration rate C) Increase water loss D) Increase enzymatic activity	1.5	CO1
Q9	In canning, what is the purpose of heating the product? A) Flavor enhancement B) Destruction of microorganisms C) Color improvement D) Weight reduction	1.5	CO1
Q10	Which technique is best for preserving the original flavor of fruits? A) Canning B) Drying C) Freezing D) Smoking	1.5	CO1
Q11	Which product is prepared by concentrating fruit juice? A) Squash B) Cordial C) Concentrate D) Nectar	1.5	CO4
Q12	Carbonated beverages are mainly: A) Alcoholic B) Non-alcoholic C) Fermented D) Vinegar-based	1.5	CO1
Q13	Which processed product has the highest sugar content? A) Jam B) Fruit drink C) Squash D) Juice	1.5	CO1
Q14	Which of the following is the major component of fruits? A) Fat B) Protein C) Water D) Fiber	1.5	CO1
Q15	Anthocyanins are responsible for which color in fruits and vegetables? A) Red/Blue/Purple B) Green C) Yellow D) White	1.5	CO1

Q16	Respiration rate in fruits increases with: A) Lower temperatures B) Higher humidity C) Increased temperature D) Dehydration	1.5	CO1
Q17	Mechanical damage during handling leads to: A) Better shelf life B) Faster ripening C) Increased spoilage D) Reduced weight	1.5	CO4
Q18	MAP extends shelf life by altering: A) Temperature B) Moisture content C) Gas composition D) Acidity	1.5	CO1
Q19	Which is a benefit of modified atmosphere packaging? A) Lower weight B) Better taste C) Extended freshness D) Faster spoilage	1.5	CO1
Q20	Pasteurization of fruit juices is done to: A) Increase sugar content B) Enhance color C) Destroy harmful microbes D) Thicken the juice	1.5	CO1
Section B (4Qx5M=20 Marks) (Attempt any 4)			
Q 1	List and describe the major structural components of fruits and vegetables. What roles do they play in maintaining freshness and texture?	5	CO1
Q 2	Explain the changes that occur in fruits and vegetables after harvest. How do these changes impact shelf life and quality?	5	CO1
Q 3	Describe the difference between Controlled Atmosphere (CA) storage and Modified Atmosphere Packaging (MAP), including their applications in fruit and vegetable preservation.	5	CO4
Q 4	List the common causes of post-harvest losses in fruits and vegetables.	5	CO1
Q 5	Design a basic process flow for preparing jam, jelly, or marmalade. Highlight the differences in ingredients and texture among them.	5	CO5
Section C (2Qx15M=30 Marks)			
Q 1	Ravi wants to set up a CAS unit for fruits and vegetables. Write down different components of this unit. (5 marks) Describe the principle and working of all components in detail. (10 marks)	15	CO5

Q 2	Sunil owns a fruit and vegetable canning unit. Answer the following questions: a) Describe the principle and working of mango canning with a flow chart. (5 marks) b) Describe the step-by-step process of canning in detail. (10 marks)	15	CO5
<p style="text-align: center;">Section D (2Qx10M=20 Marks) (Attempt any 2)</p>			
Q 1	Compare jelly and marmalade in terms of texture, preparation method, and ingredients.	10	CO2
Q 2	Describe the drying and refrigeration processes with their advantages and disadvantages	10	CO4
Q 3	Discuss in detail the structural and compositional differences between fruits and vegetables. How do these differences affect their processing and preservation techniques?	10	CO1